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(54) **METHOD AND SYSTEM FOR PATIENT SPECIFIC PLANNING OF CARDIAC THERAPIES ON PREOPERATIVE CLINICAL DATA AND MEDICAL IMAGES**

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(57) **ABSTRACT**

A method and system for patient-specific planning of cardiac therapy, such as cardiac resynchronization therapy (CRT), based on preoperative clinical data and medical images, such as ECG data, magnetic resonance imaging (MRI) data, and ultrasound data, is disclosed. A patient-specific anatomical model of the left and right ventricles is generated from medical image data of a patient. A patient-specific computational heart model, which comprises cardiac electrophysiology, biomechanics and hemodynamics, is generated based on the patient-specific anatomical model of the left and right ventricles and clinical data. Simulations of cardiac therapies, such as CRT at one or more anatomical locations are performed using the patient-specific computational heart model. Changes in clinical cardiac parameters are then computed from the patient-specific model, constituting predictors of therapy outcome useful for therapy planning and optimization.

